REMARKS

Claims 1-13 and 24-29 were examined and reported in the Office Action. Claims 1-6, 11-13, 24-27, and 29 are rejected. Claims 1, 5, 6, 24, 26 and 27 are amended. Claims 1-29 remain.

Applicant requests reconsideration of the application in view of the following remarks.

I. 35 U.S.C. §103(a)

A. It is asserted in the Office Action that claims 1, and 4-6 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,548,969 issued to Ewbank, et al. ("Ewbank") in view of U.S. Patent No. 3,737,202 issued to Rosales ("Rosales"). Applicant respectfully disagrees.

According to MPEP §2142 "[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." (In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). Further, according to MPEP §2143.03, "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." "All words in a claim must be considered in judging the patentability of that claim against the prior art." (In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970), emphasis added).

Applicant's claim 1 contains the limitations of "a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors, a plurality of motor control devices coupled to the plurality of motors, and a first bearing

set and a second bearing set each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set, wherein the plurality of motors, the plurality of motor control devices and the plurality of bearings continue to control the shaft rotation speed upon failure of one of the plurality of motors, the plurality of motor control devices, and the plurality of bearings."

Ewbank discloses a redundant steer-by-wire system having two left motors and two right motors, where each pair of motors are housed together. (Ewbank, Figure 1) In the Office Action it is asserted that two motors are coupled to a single shaft 106. It should be noted that element 106 is a tie rod. One skilled in the art would know that a tie rod's purpose is to steer a wheel by transmitting force to a steering knuckle. The tie rod illustrated in Ewbank is not centered within either housed motor. Applicant disagrees with the assertion in the Office Action that "it is inherent that these motors share the same shaft to enable the output of motor 54 to be transmitted past motor 56 onto the steering structure." Nowhere in Ewbank are the drive mechanism details disclosed, taught or suggested. What is disclosed is that each motor is coupled with its own motor drive and controller for redundancy so that a mechanical linkage is not necessary. Since Ewbank asserts left and right steering gear systems, what is inherent is that the motors must each be capable of driving a gear(s).

Since the disclosure of Ewbank does not teach, disclose or suggest that the motors work together simultaneously, or that they spin a common drive shaft, without the teachings in Applicant's specification it is not likely one can assume that these motors share a common drive shaft. The point in time that is critical for an obviousness determination is at the time of invention. "To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983). Obviousness cannot be established by hindsight combination to

produce the claimed invention. (In re Gorman, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed.Cir.1991)). It is the prior art itself, and not the applicant's achievement, that must establish the obviousness of the combination.

Further, since the drive elements disclosed by Ewbank are redundant, it would seem more likely that drive gears would also be redundant for safety purposes as gears can deteriorate with time. This would lead one to believe that separate drive shafts are coupled to separate drive gears, which each would be coupled to the tie rod.

Rosales discloses a bearing assembly where redundant (*i.e.*, two) bearing sets are placed in series on a shaft. (Rosales, Figure 1) Rosales, however, does not teach, suggest or disclose that the bearings in the bearing sets share a common rotating sleeve. Each of the bearing sets disclosed by Rosales have separate inner and outer races (i.e., races 22 and 23; races 19 and 20). Therefore, Rosales does not teach, disclose or suggest "a first bearing set and a second bearing set each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set."

Therefore, even if Ewbank is combined with the teachings of Rosales, the resulting invention would still not have a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors, nor a plurality of bearing sets coupled to the motors and the shaft, where a first bearing set and a second bearing set are each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set.

Thus, neither Ewbank, Rosales, nor the combination of the two, teach, disclose or suggest all the limitations of Applicant's amended claim 1. Since neither Ewbank, Rosales, nor the combination of the two disclose, teach or suggest all the limitations contained in Applicant's amended claim 1, as listed above, there would not be any motivation to arrive at Applicant's claimed invention. Thus, Applicant's amended claim 1 is not obvious over Ewbank in view of Rosales since a *prima facie* case of obviousness

has not been met under MPEP §2142. Additionally, the claims that directly or indirectly depend from Applicant's amended claim 1, namely claims 4-6, are also not obvious over Ewbank in view of Rosales for the above same reason.

Accordingly, withdrawal of the 35 U.S.C. §103(a) rejections for claims 1, and 4-6 are respectfully requested.

B. It is asserted in the Office Action that claim 2 is rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Ewbank and Rosales as applied to claim 1 above, and further in view of U.S. Patent No. 5,315,954 issued to Richmond ("Richmond"). Applicant respectfully disagrees.

Applicant's claim 2 directly depends from claim 1. Applicant has discussed claim 1 above in Section I(A) in relation to Ewbank in view of Rosales.

Richmond is relied on for disclosing a bearing alarm for sensing a bearing temperature exceeds a predetermined temperature (*i.e.*, detects overheating of a bearing). Richmond, however, does not teach, suggest or disclose a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors, nor a plurality of bearing sets coupled to the motors and the shaft, where a first bearing set and a second bearing set are each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set.

Even if Ewbank is combined with the teachings of Rosales and Richmond, the resulting invention would still not have a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors, nor a plurality of bearing sets coupled to the motors and the shaft, where a first bearing set and a second bearing set are each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set.

Neither Ewbank, Rosales, Richmond, nor the combination of the three, teach, disclose or suggest all the limitations of Applicant's amended claim 1. Since neither Ewbank, Rosales, Richmond, nor the combination of the three disclose, teach or suggest all the limitations contained in Applicant's amended claim 1, as listed above, there would not be any motivation to arrive at Applicant's claimed invention. Thus, Applicant's amended claim 1 is not obvious over Ewbank in view of Rosales and further in view of Richmond since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claim that directly depends from Applicant's amended claim 1, namely claim 2, is also not obvious over Ewbank in view of Rosales and further in view of Richmond for the above same reason.

Accordingly, withdrawal of the 35 U.S.C. §103(a) rejection for claim 2 is respectfully requested.

C. It is asserted in the Office Action that claim 3 is rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Ewbank and Rosales as applied to claim 1 above, and further in view of U.S. Patent No. 3,959,677 issued to Grieb ("Grieb"). Applicant respectfully disagrees.

Applicant's claim 3 directly depends from claim 1. Applicant has discussed claim 1 above in Section I(A) in relation to Ewbank in view of Rosales.

Grieb is relied upon for disclosing a fan and cooperating heat sink attached to a housing. Grieb, however, does not teach, suggest or disclose a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors, nor a plurality of bearing sets coupled to the motors and the shaft, where a first bearing set and a second bearing set are each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set.

Even if Ewbank is combined with the teachings of Rosales and Grieb, the resulting invention would still not have a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors, nor a plurality of

bearing sets coupled to the motors and the shaft, where a first bearing set and a second bearing set are each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set.

Neither Ewbank, Rosales, Grieb, nor the combination of the three, teach, disclose or suggest all the limitations of Applicant's amended claim 1. Since neither Ewbank, Rosales, Grieb, nor the combination of the three disclose, teach or suggest all the limitations contained in Applicant's amended claim 1, as listed above, there would not be any motivation to arrive at Applicant's claimed invention. Thus, Applicant's amended claim 1 is not obvious over Ewbank in view of Rosales and further in view of Grieb since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claim that directly depends from Applicant's amended claim 1, namely claim 3, is also not obvious over Ewbank in view of Rosales and further in view of Grieb for the above same reason.

Accordingly, withdrawal of the 35 U.S.C. §103(a) rejection for claim 3 is respectfully requested.

D. It is asserted in the Office Action that claims 11-13 are rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Ewbank and Rosales as applied to claim 1 above, and further in view of U.S. Patent No. 5,267,842 issued to Harmsen, et al. ("Harmsen"). Applicant respectfully disagrees.

Applicant's claim 11 directly depends from claim 1. Applicant has discussed claim 1 above in Section I(A) in relation to Ewbank in view of Rosales.

Harmsen is relied upon for disclosing bifilar windings. Harmsen, however, does not teach, disclose or suggest a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors, nor a plurality of bearing sets coupled to the motors and the shaft, where a first bearing set and a second bearing set are each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said

second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set.

Even if Ewbank is combined with the teachings of Rosales and Harmsen, the resulting invention would still not have a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors, nor a plurality of bearing sets coupled to the motors and the shaft, where a first bearing set and a second bearing set are each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set.

Neither Ewbank, Rosales, Harmsen, nor the combination of the three, teach, disclose or suggest all the limitations of Applicant's amended claim 1. Since neither Ewbank, Rosales, Harmsen, nor the combination of the three disclose, teach or suggest all the limitations contained in Applicant's amended claim 1, as listed above, there would not be any motivation to arrive at Applicant's claimed invention. Thus, Applicant's amended claim 1 is not obvious over Ewbank in view of Rosales and further in view of Harmsen since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claims that directly or indirectly depend from Applicant's amended claim 1, namely claims 11-13, are also not obvious over Ewbank in view of Rosales and further in view of Harmsen for the above same reason.

Accordingly, withdrawal of the 35 U.S.C. §103(a) rejections for claims 11-13 are respectfully requested.

E. It is asserted in the Office Action that claims 24-27 are rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Ewbank, Rosales, and Grieb as applied to claim 3. Applicant respectfully disagrees.

Applicant's amended claim 24 contains the limitations of " a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors, a plurality of motor control devices coupled to the plurality of motors, a first bearing set and a second bearing set each coupled to the motors and the shaft, each of

the plurality of bearing sets including a plurality bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set, a bearing failure detection device coupled to the shaft. a fan blade coupled to a hub and the shaft, a housing coupled to the plurality of motors, and a heat sink coupled to the housing, wherein the plurality of motors, the plurality of motor control devices and the plurality of bearings continue to rotate the fan blade upon failure of one of the plurality of motors, the plurality of motor control devices, and the plurality of bearings."

Ewbank discloses a redundant steer-by-wire system having two left motors and two right motors, where each pair of motors are housed together. (Ewbank, Figure 1) Ewbank, however, does not teach, disclose or suggest a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors.

Rosales discloses a bearing assembly where redundant (*i.e.*, two) bearing sets are placed in series on a shaft. (Rosales, Figure 1) Rosales, however, does not teach, suggest or disclose that the bearings in the bearing sets share a common rotating sleeve. Each of the bearing sets disclosed by Rosales have separate inner and outer races (i.e., races 22 and 23; races 19 and 20). Therefore, Rosales does not teach, disclose or suggest "a first bearing set and a second bearing set each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set."

Grieb is relied upon for disclosing a fan and cooperating heat sink attached to a housing. Grieb, however, does not teach, suggest or disclose a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors, nor a plurality of bearing sets coupled to the motors and the shaft, where a first bearing set and a second bearing set are each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set.

Even if Ewbank is combined with the teachings of Rosales and Grieb, the resulting invention would still not have a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors, nor a plurality of bearing sets coupled to the motors and the shaft, where a first bearing set and a second bearing set are each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set.

Neither Ewbank, Rosales, Grieb, nor the combination of the three, teach, disclose or suggest all the limitations of Applicant's amended claim 24. Since neither Ewbank, Rosales, Grieb, nor the combination of the three disclose, teach or suggest all the limitations contained in Applicant's amended claim 24, as listed above, there would not be any motivation to arrive at Applicant's claimed invention. Thus, Applicant's amended claim 24 is not obvious over Ewbank in view of Rosales and further in view of Grieb since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claims that directly or indirectly depend from Applicant's amended claim 24, namely claims 25-27, are also not obvious over Ewbank in view of Rosales and further in view of Grieb for the above same reason.

Accordingly, withdrawal of the 35 U.S.C. §103(a) rejections for claims 24-27 are respectfully requested.

F. It is asserted in the Office Action that claim 29 is rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Ewbank, Rosales, Grieb, and Richmond as applied to claim 24 above. Applicant respectfully disagrees.

Applicant's claim 29 directly depends from claim 24. Applicant has discussed claim 24 above in Section I(E) in relation to Ewbank in view of Rosales and Grieb, and further in view of Harmsen.

Richmond is relied on for disclosing a bearing alarm for sensing a bearing temperature exceeds a predetermined temperature (*i.e.*, detects overheating of a bearing). Richmond, however, does not teach, suggest or disclose a plurality of motors

coupled to a single drive shaft disposed through a center portion of said plurality of motors, nor a plurality of bearing sets coupled to the motors and the shaft, where a first bearing set and a second bearing set are each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set.

Harmsen is relied upon for disclosing bifilar windings. Harmsen, however, does not teach, disclose or suggest a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors, nor a plurality of bearing sets coupled to the motors and the shaft, where a first bearing set and a second bearing set are each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set.

Even if Ewbank is combined with the teachings of Rosales, Grieb, Richmond and Harmsen, the resulting invention would still not have a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors, nor a plurality of bearing sets coupled to the motors and the shaft, where a first bearing set and a second bearing set are each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set.

Neither Ewbank, Rosales, Grieb, Richmond, Harmsen, nor the combination of the five, teach, disclose or suggest all the limitations of Applicant's amended claim 24. Since neither Ewbank, Rosales, Grieb, Richmond, Harmsen, nor the combination of the five disclose, teach or suggest all the limitations contained in Applicant's amended claim 24, as listed above, there would not be any motivation to arrive at Applicant's claimed invention. Thus, Applicant's amended claim 24 is not obvious over Ewbank in view of Rosales, Grieb, Richmond and further in view of Harmsen since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claim that directly

depends from Applicant's amended claim 24, namely claim 29, is also not obvious over Ewbank in view of Rosales, Grieb, Richmond and further in view of Harmsen for the above same reason.

Accordingly, withdrawal of the 35 U.S.C. §103(a) rejection for claim 29 is respectfully requested.

III. Allowable Subject Matter

Applicant notes with appreciation the Examiner's assertion that claims 7-10, and 28 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and to eliminate any §112 rejections.

Applicant respectfully asserts that claims 1-29 as it now stands, are allowable for the reasons given above.

CONCLUSION

In view of the foregoing, it is submitted that claims 1-29 patentably define the subject invention over the cited references of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes a telephone conference would be useful in moving the case forward, he is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,

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Dated: November 24, 2003

By: _____
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Jean Svoboda